

Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 4B and replaces the original sheet. In Fig. 4B, the previous erroneous text has been replaced with the correct text for decision block 434.

REMARKS

Claims 1 to 46 were pending. With this Response, Applicant (a) amends claims 1, 10, 11, 12, 14, 16, 17, 22, 26, 27, 31, 32, and 34, (b) cancels claims 20, 33, and 36 to 46, and (c) adds claim 47.

Amendment to the Specification and the Drawings

Applicant has amended the Specification and Drawings to correct errors and improve clarity. No new matter has been added. In particular, amendments to the paragraph starting on p. 18, line 24 and ending on p. 19, line 3 are supported by the original Fig. 4B and by the original claims 36 to 39.

§ 103(a) Rejections

The Examiner rejected claims 1 to 16 and 20 to 46 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,393,054 (“Altunbasak”) in view of U.S. Patent No. 6,072,542 (“Wilcox et al.”).

Applicant has amended claim 1, which now recites:

1. A method for detecting a shot boundary, comprising:

determining a first difference between a first frame and a second frame, wherein the first difference comprises a partial comparison between the first frame and the second frame;

determining whether the first difference exceeds a threshold, wherein the first frame and the second frame comprise a border for a candidate shot boundary when the first difference exceeds the threshold; and

when the first difference exceeds the threshold,

computing at least one of an edge difference and a color difference between the first frame and the second frame;

confirming whether the first frame and the second frame comprise a border for a candidate shot boundary based on the value of at least one of the edge difference and color difference; and

searching for a shot boundary between the first frame and the second frame.

Amended claim 1 (emphasis added).

In amended claim 1, the recited method utilizes two tests to determine if two frames form a border for a candidate shot boundary before performing a search for a shot boundary between the two frames. In the first test, a partial comparison between the frames is performed to determine a first

difference between the frames. If the first difference is greater than a threshold, then the frames is a border for a candidate shot boundary and a second test is performed. In the second pass, at least one of an edge difference and a color difference between the frames is determined. Based on the result, the frames may be confirmed as a border for a shot boundary and is followed by a search for a shot boundary between the frames.

The combination of Altunbasak and Wilcox et al. do not disclose all the elements of amended claim 1. Altunbasak discloses a first test that determines if a current group of pictures (GOP) contains a sharp shot boundary and a second test that determines if the current GOP contains a gradual shot boundary. If the first test is affirmative, then the first test is followed by a search for the sharp shot boundary. If the second test is affirmative, then the second test is followed by a search for the gradual shot boundary. Note that if the first test is affirmative, the first test is not followed by the second test to confirm the result of the first test because the two tests each identify a different type of shot boundary. This is different from the two tests recited in amended claim 1, where the first tests determines if two frames form a border for a candidate shot boundary and if so, the first test is followed by both the second tests to confirm the result of the first test and the search for a shot boundary between the frames.

Similarly, Wilcox et al. also does not disclose the two tests recites in amended claim 1 and therefore the combination of Altunbasak and Wilcox et al. does not cure the deficiency of the references. Accordingly, Altunbasak and Wilcox et al. do not disclose all the elements of amended claim 1.

There is no motivation or suggestion to combine Altunbasak and Wilcox et al. because the combination it would render the invention of Altunbasak inoperable for its intended purpose. Altunbasak discloses a system 10 for detecting shot boundaries in compressed video without decompressing the video. Altunbasak, col. 2, lines 13 to 15. System 10 includes a difference detector 14 that compares frames in the compressed video using DC histogram of macro-blocks in the compressed video. Altunbasak, col. 8, lines 23 to 48; col. 9, line 9 to 16. On the other hand, Wilcox et al. discloses that shot boundaries can be found using pixel differences and edge differences. Wilcox et al., col. 3, lines 41 to 52. If difference detector 14 of Altunbasak is modified to include the color and edge tests of Wilcox et al., then system 10 of Altunbasak cannot only operate on compressed video as the color and edge tests normally operate on uncompressed images. Accordingly, there is no motivation or suggestion to combine Altunbasak and Wilcox et al.

For the reasons above, claim 1 is patentable over the combination of Altunbasak and Wilcox et al.

Claims 2 to 16 depend from claim 1 and are patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 1.

Applicant has canceled claim 20, thereby rendering its rejection moot.

Claim 21 depends from claim 1 and is patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 1.

Applicant has amended independent claim 22 to include similar language as claim 1. Thus, claim 22 is patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 1.

Claims 23 to 26 depend from claim 22 and are patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 22.

Applicant has amended independent claim 27 to include similar language as claim 1. Thus, claim 27 is patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 1.

Claims 28 to 31 depend from claim 27 and are patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 27.

Applicant has amended independent claim 32 to include similar language as claim 1. Thus, claim 32 is patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 1.

Applicant has canceled claim 33, thereby rendering its rejection moot.

Applicant has amended independent claim 34 to include similar language as claim 1. Thus, claim 34 is patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 1.

Claim 35 depends from claim 34 and is patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 35.

Applicant has canceled claims 36 to 46, thereby rendering their rejections moot.

Allowable Subject Matter

The Examiner indicated that claims 17 to 19 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant has amended claim 17 to independent form. Thus, claim 17 is in condition for allowance.

Claims 18 and 19 depend from claim 17 and are therefore in condition for allowance.

New Claim

Applicant has added a new claim 47, which recite similar language as claim 1, Thus, claim 47 is patentable over Altunbasak and Wilcox et al. for at least the same reasons as claim 1.

In summary, claims 1 to 46 were pending in the above-identified application. This Response amends claims 1, 10, 11, 12, 14, 16, 17, 22, 26, 27, 31, 32, 34, cancels claims 20, 33, and 36 to 46, and adds claim 47. For the above reasons, Applicant respectfully requests the allowance of claims 1 to 19, 21 to 32, 34 to 39, and 47. Should the Examiner have any questions, please call the undersigned at (408) 382-0480.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Signature

Date

Respectfully submitted,



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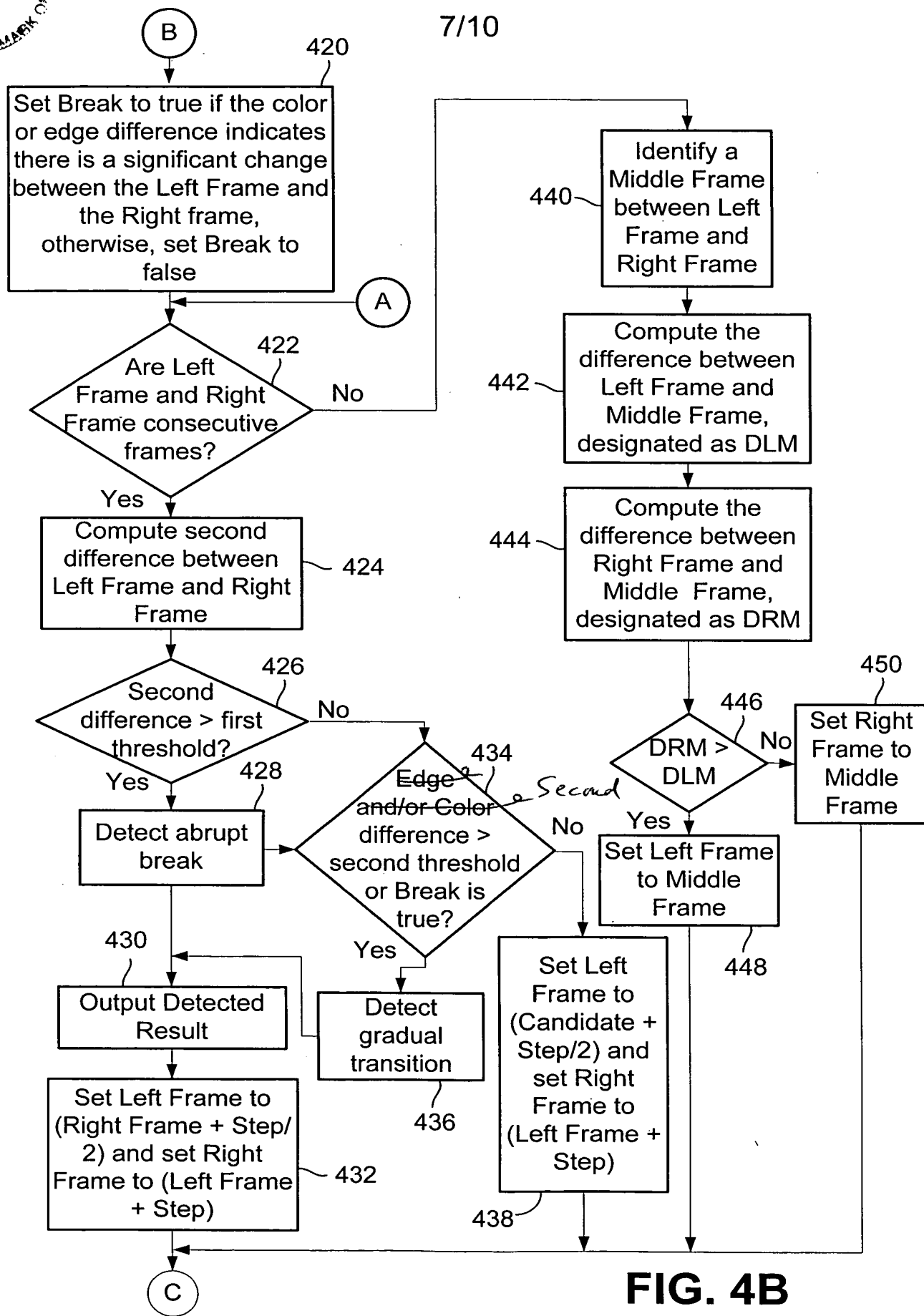


FIG. 4B